CONTENTS OF VOLUME 422

March 1990

MARRIOTT J.F. & MARSHALL Janice M. Differential effects of hypoxia upon contractions evoked by potassium and noradrenaline in rabbit arteries *in vitro*. 1

MARRIOTT J.F. & MARSHALL Janice M. Effects of hypoxia upon contractions evoked in isolated rabbit pulmonary artery by potassium and noradrenaline. 15

DRAKE-HOLLAND A.J., MILLS C.J., NOBLE Mark I.M. & PUGH S. Responses to changes in filling and contractility of indices of human left ventricular mechanical performance. 29

JØRGENSEN Karl Evald, KRAGH-HANSEN Ulrich & SHEIKH M. Iqbal Transport of leucine, isoleucine and valine by luminal membrane vesicles from rabbit proximal tubule. 41

DUCHATEAU Jacques & HAINAUT Karl Effects of immobilization on contractile properties, recruitment and firing rates of human motor units. 55

ACEVEDO Mercedes, OLVER Richard E. & WARD Martyn R. Ionic permeabilities of the cell membranes of sheep tracheal epithelium. 67

ZHANG Z.W. & FELTZ P. Nicotinic acetylcholine receptors in porcine hypophyseal intermediate lobe cells. 83

PAHAPILL P.A. & SCHLICHTER L.C. Modulation of potassium channels in human T lymphocytes: effects of temperature. 103

KRNJEVIĆ K. & WALZ W. Acidosis and blockade of orthodromic responses caused by anoxia in rat hippocampal slices at different temperatures. 127

KIHARA Mikihiro & Low Phillip A. Regulation of rat nerve blood flow: role of epineurial α-receptors. 145

KAISER P.K., LEE B.B., MARTIN P.R. & VALBERG A. The physiological basis of the minimally distinct border demonstrated in the ganglion cells of the macaque retina. 153

IWAMOTO H., SUGAYA R. & SUGI H. Force–velocity relation of frog skeletal muscle fibres shortening under continuously changing load. 185

HESTRIN S., NICOLL R.A., PERKEL D.J. & SAH P. Analysis of excitatory synaptic action in pyramidal cells using whole-cell recording from rat hippocampal slices. 203

HARRISON D.K., BIRKENHAKE S., KNAUF S.K. & KESSLER M. Local oxygen supply and blood flow regulation in contracting muscle in dogs and rabbits. 227

GREER John J. & STEIN Richard B. Fusimotor control of muscle spindle sensitivity during respiration in the cat. 245

HÄBLER H.-J., JÄNIG W., KOLTZENBURG M. & MCMAHON S.B. A quantitative study of the central projection patterns of unmyelinated ventral root afferents in the cat. 265

KING K.A. & LEDSOME J.R. The effect of tachycardia on right atrial dynamics and plasma atrial natriuretic factor in anaesthetized rabbits. 289

AKASU T., NISHIMURA T. & TOKIMASA T. Calcium-dependent chloride current in neurones of the rabbit pelvic parasympathetic ganglia. 303

SHIBUKI Katsuei Activation of neurohypophysial vasopressin release by Ca^{2+} influx and intracellular Ca^{2+} accumulation in the rat. 321

TURNER Dennis A. Feed-forward inhibitory potentials and excitatory interactions in guinea-pig hippocampal pyramidal cells. 333

HEAD Stewart I., STEPHENSON D. George & WILLIAMS David A. Properties of enzymatically isolated skeletal fibres from mice with muscular dystrophy. 351

UCHIMURA N. & NORTH R.A. Muscarine reduces inwardly rectifying potassium conductance in rat nucleus accumbens neurones. 369

PEERS C. Effect of lowered extracellular pH on Ca^{2+}-dependent K^+ currents in type I cells from the neonatal rat carotid body. 381

DATTA A.K. & STEPHENS J.A. Synchronization of motor unit activity during voluntary contraction in man. 397

WONG Lid B., MILLER Irving F. & YEATES Donovan B. Regulatory pathways for the stimulation of canine tracheal ciliary beat frequency by bradykinin. 421

HARRISON Neil L. On the presynaptic action of baclofen at inhibitory synapses between cultured rat hippocampal neurones. 433

BOBKER Daniel H. & WILLIAMS John T. Serotinin-mediated inhibitory postsynaptic potential in guinea-pig prepositus hypoglossi and feedback inhibition by serotonin. 447

ALLEN T.G.J. & BURNSTOCK G. M_1 and M_2 muscarinic receptors mediate excitation and inhibition of guinea-pig intracardiac neurones in culture. 463

LAGADIC-GOSSMAN D. & FEUVRAY D. Decreased sensitivity of contraction to changes of intracellular pH in papillary muscle from diabetic rat hearts. 481

STEELE D.S., SMITH G.L. & MILLER D.J. The effects of taurine on Ca^{2+} uptake by the sarcoplasmic reticulum and Ca^{2+} sensitivity of chemically skinned rat heart. 499

THORNBURY K.D., McHALE N.G., ALLEN J.M. & HUGHES Gwen Nerve-mediated contractions of sheep mesenteric lymph node capsules 513

TREACY P.J., JAMIESON G.G. & DENT J. Pyloric motor function during emptying of a liquid meal from the stomach in the conscious pig. 523

BANGSBO J., GOLLNICK P.D., GRAHAM T.E., JUEL C., KIENS B., MIZUNO M. & SALTIN B. Anaerobic energy production and O_2 deficit–debt relationship during exhaustive exercise in humans. 539

BELUZZI O. & SACCHI O. The calcium-dependent potassium conductance in rat sympathetic neurones. 561

OGDEN D.C., CAPIOD T., WALKER J.W. & TRENTHAM D.R. Kinetics of the conductance evoked by noradrenaline, inositol trisphosphate or Ca^{2+} in guinea-pig isolated hepatocytes. 585

PROCEEDINGS OF THE PHYSIOLOGICAL SOCIETY

3–4 *November* 1990

St George's Meeting

DEMONSTRATIONS

Brenton D., Forsling Mary L., Head S.D. & Wallis M.D. An interactive video-disc teaching system on breathlessness. 2*P*

Blake D.R., Levick J.R., Merry P., Revell P.A. & Stevens C.R. The assessment of vascularity in the synovial lining of human rheumatoid knees, using three different endothelial markers. 3*P*

Ashhurst D.E., Bland Y.S. & Levick J.R. Immunohistochemical identification of different classes of collagen in synovial interstitium from the rabbit knee. 4*P*

Andrews P.L.R. & Davidson H.I.M. A method for the induction of emesis in the conscious ferret by abdominal vagal stimulation. 5*P*

Mauger Jeremy S. & Williams Thelma L. Computer-assisted analysis of bursts of neural activity. 6*P*

COMMUNICATIONS

King A.E., Thompson S.W.N. & Woolf C.J. The prolonged postsynaptic depolarizations evoked in ventral horn neurones following stimulation of small-calibre primary afferents in the isolated rat hemisected spinal cord–limb preparation are APV sensitive. 7*P*

Oswaldo-Cruz E., Picanço-Diniz C.W., Pompeu M.S.S. & Silveira L.C.L. Asymmetries of the representation of the contralateral visual field on area 17 of the cortex of the anaesthetized agouti do not match the retinal ganglion cell regional densities. 8*P*

Berardi N., Carmignoto G., Domenici L. & Maffei L. Intraventricular NGF injections prevent the effects of monocular deprivation in the rat. 9*P*

Foster G.A., Jacob T.J.C. & Rose R.M. Firing pattern of rat ventral thalamic neurones in culture. 10*P*

Hirsch J.C. Intracellular analysis of synaptic plasticity in the prefrontal cortex: an *in vitro* study in the rat. 11*P*

Brown M.C., Lunn E.R. & Perry V.H. Failure of normal Wallerian degeneration results in very poor regeneration of cutaneous afferent fibres in mice. 12*P*

Gallagher M.J.P. & McGeown J.G. Responses of isolated strips of bovine mesenteric lymph node capsule to field stimulation. 13*P*

Grassi C. & Passatore M. Sympathetic nerve stimulation at physiological frequencies can modify the contraction of fatigued and non-fatigued digastric muscle in the rabbit. 14*P*

Farmer S.F., Ingram D.A. & Stephens J.A. Cutaneomuscular reflex responses recorded from first dorsal interosseous muscle in a patient with mirror movements. 15*P*

Harper A.A. & Watt P.W. The action of temperature on the electrical activity of cardiac muscle of the marine teleosts saithe (*Pollachius virens*) and plaice (*Pleuronectes platessa*) measured *in vitro*. 16*P*

Austin S. & Scholfield C.N. Lignocaine action is enhanced by phorbol dibutyrate in isolated rat olfactory cortical slices. 17*P*

Dolphin A.C. & Huston E. The pharmacology of the $GABA_B$-mediated inhibition of calcium channel currents and transmitter release in cultured rat dorsal root ganglion and cerebellar neurones. 18*P*

Henderson G. & Seward E.P. Inhibition of an N-like calcium channel current by μ-opioid receptor activation in the human neuroblastoma cell line SH-SY5Y. 19*P*

Harrison T.M., Norman R.I., Phillips H.J. & W.-Wray D. Effect of monoclonal antibody on calcium channel function in neuroblastoma cells. 20*P*

Macdonald I.A. & Siyamak A.Y. Prolonged underfeeding but not acute starvation reduces noradrenaline-induced thermogenesis in conscious rats. 21*P*

Coleshaw S.R.K., Johnston G., Macdonald A.G. & Pertwee R.G. The effect of increases in body temperature on thermal perception in man. 22*P*

Levick J.R. & McDonald J.N. Influence of intra-articular hyaluronan on flow across the synovial lining of knees in anaesthetized rabbits. 23*P*

Angerson W.J., Ferrell W.R. & Khoshbaten A. Assessment of knee joint blood flow in anaesthetized cats and rabbits. 24*P*

Davies A. & Pack R.J. Lung receptor activity in anaesthetized rabbits with pulmonary fibrosis. 25*P*

Guz A., Horner R.L. & Innes J.A. Activation of genioglossus muscle by sudden negative pharyngeal pressure in man. 26*P*

Anderson J.W., Sant'Ambrogio Franca B. & Sant'Ambrogio G. Effect of menthol isomers on laryngeal cold receptors in the anaesthetized dog. 27*P*

Salonen R.O., Webber S.E. & Widdicombe J.G. Hot humid air-induced smooth muscle and vascular responses in the trachea of the anaesthetized dog. 28*P*

Nye P.C.G., Paterson D.J., Peers C. & Robertson B.E. Effects of tolbutamide and diazoxide on hypoxic vasoconstriction of lungs isolated from the rat. 29*P*

Karlsson J.-A., Kröll F., Lundberg J.M. & Persson C.G.A. Axon reflex-induced bronchoconstriction in guinea-pig perfused lung preparation. 30*P*

Higenbottam T.W. & Mohammed S.P. Distribution of airway receptors responsive to capsaicin and prostaglandin E_2 in man. 31*P*

Higenbottam T. & Lowry R. Adaptation and cross-adaptation of the cough reflex in response to distilled water, capsaicin and prostaglandin E_2 aerosols in man. 32*P*

Choudry Nozhat B., Fuller R.W. & Karlsson J.-A. Effect of inhaled frusemide and hydrochlorthiazide on capsaicin-induced cough and increase in airways resistance in man. 33*P*

Forsberg K., Karlsson J.-A., Lundberg J.M. & Zackrisson C. Effect of laryngeal denervation on irritant-induced cough and bronchoconstriction in conscious guinea-pigs. 34*P*

Webber S.E. PAF-induced hyperresponsiveness of ferret tracheal smooth muscle and submucosal gland secretion *in vitro*. 35*P*

Di Benedetto G., Manara-Shediac F.S. & Mehta A. The effect of dibutyryl-cyclic AMP on the ciliary activity of human respiratory epithelium *in vitro*. 36*P*

Erjefält I., Gustaffson B. & Persson C.G.A. Increased serosal hydrostatic pressure causes luminal entry of macromolecules in *in vitro* tracheal tubes of guinea-pigs. 37*P*

Sanjar S. Synergistic stimulation of tracheal mucus velocity by VIP and pilocarpine in the anaesthetized ferret. 38*P*

Elliott A.R., Guy H.J.B., Prisk G.K. & West J.B. Maximum expiratory flow–volume curves during short periods of microgravity in man. 39*P*

Eccles R. & Williams R.G. An external measure of human laryngeal size which predicts laryngeal fundamental frequency. 40*P*

Kirk Kiaran Amiloride-sensitive K^+ transport across the lamprey erythrocyte membrane. 41*P*

Mahaut-Smith M.P. Whole-cell patch-clamp recordings of chloride currents from human platelets. 42*P*

Akbarali H.I., Giles W.R. & Nakajima T. K^+ currents in rabbit single oesophageal tunica muscularis mucosae cells. 43*P*

Boyd C.A.R. Cellular basis of active D-glucose transport in mouse and rabbit lung. 44*P*

Barer Gwenda, Russell P.C. & Wright Caroline Arachidonic acid metabolism in chronic hypoxia: studies in isolated rat lungs. 45*P*

Hughes K.R., Semple S.J.G., Stidwill R. & Treasure T. The acute effects of alteration in ventilation on arterial potassium in the anaesthetized cat. 46*P*

Amsler B., Anderson G.P., Morley J. & Newth C.J.L. The ventilatory and oxygen costs in the anaesthetized rhesus monkey of inhaling drugs used in the therapy and diagnosis of asthma. 47*P*

Amsler B., Anderson G.P., Morley J. & Newth C.J.L. The effects of varying inflation and deflation pressures on the expiratory deflation flow–volume relationships in anaesthetized rhesus monkeys. 48*P*

Laycock J.F. & Nyunt-Wai V. Effect of acute volume expansion on the pressor sensitivity to vasopressin of anaesthetized rats. 49*P*

Steptoe A. & Vogele C. Cardiac baroreflex sensitivity assessment using spontaneous sequence analysis of continuous non-invasive blood pressure recordings in man. 50*P*

Bennett T., Compton A.M., Gardiner S.M., Moncada S. & Palmer R.M.J. Effects of L-arginine acetate (L-arg) on the haemodynamic actions of N^G-monomethyl-L-arginine (L-NMMA) in conscious rats. 51*P*

McGrath J.C., Moss V.A. & Wight M. Responses mediated by postjunctional α-adrenoreceptors of the isolated rabbit lateral saphenous vein measured by on-line video image analysis. 52*P*

Macdonald A.G., Ogston D. & Pickles D.M. An improved method for studying the blockade of platelet activation by hydrostatic pressure: aggregation induced by ADP. 53*P*

Alexandre A., Deana R., Doni M.G., Ruzzene M. & Zoccarato F. Cyclic GMP inhibition of human platelet activation induced by fluoroaluminate. 54*P*

Aiken S.P., Horn N.M. & Saunders N.R. L-Histidine stimulates uptake of zinc by rat erythrocytes *in vitro*. 55*P*

Al-Modhefer A.J.A., Bradbury M.W.B. & Simons T.J.B. The chemical state of lead in human blood serum. 56*P*

Bhoola K.D., Cullen D.R., Figueroa C.D., Jones T.H. & Smith Christine M. Co-presence of immunoreactive tissue kallikrein and prolactin in human anterior pituitary adenomas. 57*P*

Chapman A.J., Leigh A.J., Reddy K.M., Whitehead S.A. & Wilson C.A. Isoforms of luteinizing hormone (LH) induced by *in vitro* gonadotrophin-releasing hormone (GnRH) self-priming treatment. 58*P*

Forsling Mary L., Kelestimur H. & Kundi Salma Release of vasopressin during suppression of the oestrous cycle in the rat. 59*P*

Bloom S.R., Edwards A.V. & Jones C.T. The relation between adrenal blood flow and cortisol output in response to ACTH in conscious calves. 60*P*

Grundy D., Kerrigan D., Rudge L. & Scratcherd T. Reflex corpo-antral coupling in the conscious dog. 61*P*

Blackshaw L.A. & Grundy D. Reflex changes in gastrointestinal motility following close systemic administration of cholecystokinin-octapeptide in anaesthetized ferrets. 62*P*

Bremner A.J., Dockray G.J. & Forster E.R. The mechanism of action of liquid test meals on gastric emptying in rat. 63*P*

Mann G.E. & Norman P.S.R. Uptake of circulating noradrenaline in the isolated perfused rat pancreas. 64*P*

Goggin P.M. & Northfield T.C. Anatomical and biochemical basis of hydrophobicity of isolated pig gastric mucosa. 65*P*

Levin R.J. & Nzegwu Helen Vitamin A deficiency and its effect on *in vitro* jejunal and ileal electrogenic secretion in the rat. 66*P*

Hirst B.H. & Wallis Jenny L. Sodium-coupled D-glucose uptake in adult and aged mouse and rat jejuna brush border membrane vesicles *in vitro*. 67*P*

Fargon F., McNaughton P.A. & Sepúlveda F.V. Chloride currents in enterocytes isolated from guinea-pig small intestine. 68*P*

Giraldez F., Sheppard D.N. & Valverde M.A. Whole-cell patch-clamp recordings of potassium currents in isolated *Necturus* enterocytes. 69*P*

Jenkinson D.H. & Sandford Christine A. Properties of a volume-activated potassium conductance in isolated guinea-pig hepatocytes. 70*P*

Laboisse C., Robertson W.R., Warhurst G. & Wood A. Regulation of intracellular pH in a cultured human colonic cell line (HT29-19A): involvement of bicarbonate-dependent and independent mechanisms. 71*P*

Law R.O. Impairment of rat renal papillary cell volume regulation in hyperosmotic media by K^+ channel blocking agents. 72*P*

Boland P.S. & Garland H.O. Effects of D-glucose on tubular calcium handling in the anaesthetized rat: a micropuncture study. 73*P*

Abu-Kishk R.A., Noble A.R., Tsai B. & Williams B.C. Effect of sodium fluoride on renin release by superfused rat kidney cortex cells. 74*P*

Buckley M.G., MacGregor G.A., Markandu N.D., Miller M.A., Singer D.R.J. & Sugden A.L. Hormonal and renal responses to acute intravenous and oral sodium loading in man. 75*P*

POSTER COMMUNICATIONS

Debnam E.S. & Ebrahim H.Y. Rapid stimulation of galactose uptake across the brush-border membrane induced by exposure of isolated rat enterocytes to pancreatic glucagon. 76*P*

Muñoz M., Peran S. & Saiz M.T. Glucose deprivation stimulates amino acid transport by human colon adenocarcinoma cells perfused in microcarrier cultures. 77*P*

Abdul-Ghaffar T. & Canfield P. Cholinergic inhibition of bicarbonate secretion in rat caecum under *in vitro* conditions. 78*P*

Fargon F., McNaughton P.A. & Sepúlveda F.V. Inwardly rectifying potassium currents in isolated guinea-pig enterocytes. 79*P*

Lung M.A. & Wang J.C.C. Direct measurement of arterial inflow, venous outflow and saliva secretion of mandibular gland in anaesthetized dogs: effects of parasympathetic stimulation. 80*P*

Dockray G.J., Garner A., Hampson S.E. & Moros S. Action of gastrin–cholecystokinin antagonists on acid secretion in the anaesthetized rat. 81*P*

Parekh Anant B. & Tomita Tadao Catecholamine action in stomach smooth muscle *in vitro*. 82*P*

Figueroa C.D. & Taberner P.V. Hypertrophy of islets in the pancreas of obese diabetic male CBA/Ca mice. 83*P*

Savidge T.C. & Smith M.W. Cyclosporin-A reduced M cell numbers in antigen-stimulated mouse Peyer's patches. 84*P*

Goggin P.M., Marrero J.W., Jazrawi R.P., Yu C.W. & Northfield T.C. Effect of *Campylobacter pylori* infection on gastric mucosal hydrophobicity in man. 85*P*

Brown C.D.A., Laboisse C.L., Long S.P., Rees W.D.W. & Warhurst G. Identifications of a sodium–potassium–chloride co-transporter in a human gastric cell line (HGT-01). 86*P*

Angerson W. J., Carter D.C., Geraghty J.G. & Gough D. Focal changes in blood flow associated with acute taurocholate-induced gastric mucosal lesions in the anaesthetized rat. 87*P*

McKirdy H.C., McKirdy Mairi L. & Marshall R.W. Effects of cisapride on isolated muscle strips from human digestive tract. 88*P*

Pilot M.A., Qin X.Y., Scott S.M. & Williams N.S. α_2-Adrenergic influences on colonic motility in conscious dogs. 89*P*

Johnson I.T. & Lund E.K. Digestibility of starch in cooked and uncooked rolled oats estimated from breath hydrogen (H_2) production in man. 90*P*

Gee J.M. & Johnson I.T. The physiological effects of resistant starch in the rat. 91*P*

Andrews P.L.R. & Davidson H.I.M. Activation of vagal afferent terminals by 5-hydroxytryptamine is mediated by the 5-HT_3 receptor in the anaesthetized rabbit. 92*P*

Andrews P.L.R., Bingham S. & Davidson H.I.M. Vagotomy and 5-HT_3 receptor antagonism modify the motility response to 5-HT in the gastric antrum of the anaesthetized ferret. 93*P*

Nye P.C.G., Robertson B.E. & Warren J.B. Inhibition of nitric oxide production enhances hypoxic pulmonary vasoconstriction of the isolated rat lung. 94*P*

Lung M.A. & Wang J.C.C. Control of nasal airway resistance by two venous systems in anaesthetized dogs. 95*P*

Denavit-Saubie M., Foutz A. & Schmid K. Evidence for GABAergic inhibition of medullary respiratory neurones during their active phase in anaesthetized or decerebrate cats. 96*P*

Davies J.R., Richardson P.S. & Somerville M. The chemical nature of radiolabelled macromolecules secreted by human bronchus *in vitro*. 97*P*

Bitsakou Hariklia, Carić Damira, McHardy G.J.R. & Young Sheila The effects of the weather on asthmatic patients. 98*P*

Barnes P.J., Kuo H.P., Rogers D.F., Rohde J.A.L. & Tokuyama K. Effect of vagus nerve stimulation on goblet-cell secretion in guinea-pig trachea *in vivo*. 99*P*

Barnes P.J., Kuo H.P., Rogers D.F., Rohde J.A.L. & Tokuyama K. Effects of sensory neuropeptides on goblet-cell secretion in guinea-pig trachea *in vivo*. 100*P*

Barker P.M., Markiewicz M., Strang L.B. & Walters D.V. Induction of adrenaline-dependent lung liquid reabsorption in the fetal sheep by triiodothyronine and hydrocortisone is inhibited by cycloheximide. 101*P*

Ebright L., Geller S., Glass M., Smith L.J. & Thyrum P.T. Inhibition of leukotriene (LT)D_4-induced bronchoconstriction in normal subjects by the oral LTD_4 receptor antagonist ICI 204,219. 102*P*

Kumar P., Marshall Janice M. & Mian Rubina Interactions between potassium and β-adrenoreceptors in the cardiovascular response to moderate hypoxia in the rat. 103*P*

Marshall Janice M. & Neylon Marie The role of adenosine in the cardiovascular response to severe hypoxia in the rat. 104*P*

Jones P.W., Oldfield W.L.G. & Wilson Rachel C. Reduction in breathlessness during exercise at sea level after four weeks at an altitude of 4000 metres. 105*P*